

How Science Proves Everybody Started Out To Be Twins

Most Persons Are Surprisingly "Two-Faced," and This Is Because the Two Sides of Our Bodies Were Developed by the Same Twinning Process That Often Produces Two Complete Individuals Instead of One

TO call a man or woman "two-faced" is to offer an insult, and yet that is exactly what almost everybody deserves to be called. In the sense that there is a radical difference between the two sides of our faces, that the right side is seldom anything like a duplicate of the left side, almost all of us are "two-faced."

Science finds that it is very rare, indeed, for any human face to show anything like perfect symmetry in its two sides. Although the extent to which the two sides differ is often not apparent as we look at the face itself, it can be made plain by some simple and very interesting experiments with photographs.

Take a full-face photograph of a person and cut it in two lengthwise halves, through the exact middle of the nose. Make a photograph of the left-hand side of the picture, reversing it so that it will look as if it were the right-hand side. Join the resulting picture to the left-hand side of the photograph with which you started and you will, in most cases, have a face that looks quite different from the one in the original photograph.

Repeat this process with the right-hand side of the face and you will get a picture that looks very little like the original and also is quite different from the one obtained by matching up the two left sides.

What astonishing results can be obtained by experiments of this kind are shown by the photographs of President Harding and William Jennings Bryan, reproduced on this page. Both the Harding and Bryan faces look quite symmetrical, quite alike in shape and size, but we see that there is a wide difference between them when we match up the right-hand side with another right and the left-hand side with another left.

Mary Garden has a face that seems much more symmetrical than the average person's, but here, again, our eyes are deceiving us. She would take on quite a different appearance if the right-hand side of her face were an exact duplicate of the left, and she becomes still another woman when the left-hand side is duplicated on the right. If either of these changes should take place some night while Miss Garden lay asleep she would hardly recognize herself when she looked into the mirror on her dressing table the next morning.

Still more surprising results are obtained by applying these experiments to the charming Fairbanks Twins. By duplicating one twin's left-hand face on the right side and by duplicating the other's right-hand face on the left side we get two faces that show little or no resemblance to each other, and also that look not at all like either of the actual twins.

Beauty lovers should be thankful that the Fairbanks Twins were not born with symmetrical faces, for, as the photographs on this page show, they would have been robbed of most of the charm that has made them famous if both sides of their faces had been just alike.

These experiments with human faces are interesting not only because of the surprising and grotesque results they often give, but because they lend support to the new scientific theory that every mother's son or daughter of us started out to be twins and was only prevented by an odd accident of nature from coming into the world along with a little brother or sister.

The bodies of what are known as fraternal twins—those who had their origin in a pair of separate cells—are sel-

Mary Garden as she actually looks, her face seeming perfectly symmetrical, but there being quite a difference between the two sides



The Fairbanks Twins as they really are, with faces very lovely in spite of the fact that nature's twinning process has not made the two sides of them quite symmetrical

dom exact duplicates of one another, but only show a strong tendency to similarity. So with most of us who were born singly, the two sides of our bodies show considerable variation, as our experiments with photographs of various faces have shown. But the tendency always is, just as it is in the case of the fraternal twins, for the two sides to be alike.

Occasionally, however, we find what science calls "bilateral individuals"—persons whose two sides are exactly alike. Such persons, according to Dr. Arnold Gesell, director of the Yale Psycho-Clinic, at New Haven, Conn., owe the symmetry of their bodies to just such a twinning process as that which produces what are known as duplicate twins. Duplicate twins are always of the same sex. They resemble one another much more closely than fraternal twins and they are believed to originate

from a single cell, instead of from two separate ones.

"The human individual," says Dr. Gesell in a recent issue of "The Scientific Monthly," "is undoubtedly derived from a single fertilized cell. From this cell, through a process of symmetrical division, develop all his right and left hand homologous organs and the right and left halves of his 'unpaired' organs and structures. He is a product of developmental duplicity."

"Now in the case of true, complete, duplicate twins this process of duplication has been carried to such a degree that two offsprings result from the single cell, instead of one symmetrical individual. A perfectly symmetrical bilateral individual, on the one hand, and a perfect pair of duplicated individuals, on the other, represent the ideal extremes of the process of twinning."

"Between these extremes there are many gradations and deviations, some of them benign, others monstrous, in character. Instead of a full twinning of

the whole body there may be twinning of various parts, or only of one part. For example, in one type of twinning the size of the head and the presence of two noses may be the only sign of twinning."

The whole subject of twins is one in which science takes an extraordinary interest. If we could solve with any completeness the reasons for the resem-



On the left, Miss Garden as she would look if both sides of her face were the same as the left side; on the right, as she would look if both sides were the same as the right side

blances shown by even one pair of duplicate twins it is believed that we should be throwing valuable light on some of the most puzzling problems of heredity, development and education.

"Dr. Morton Prince has called double personality a veritable gold mine for the study of psychological phenomena," says Dr. Gesell. "Duplicate twins represent double personality in a different but no less significant sense."

Dr. C. H. Danforth, anatomist of the Washington University School of Medicine, has been making an exhaustive study of the physical characteristics of twins and the degree of their resemblance.

Duplicate twins, as Dr. Danforth explains in a recent issue of "The Journal of Heredity," do not vary in height over a quarter of an inch nor in weight over a pound or two, nor in eye and hair color. Other agreements are in shape of head, gait, sound of voice, reaction to foods and susceptibility to identical diseases. There is further agreement in likes and dislikes, in preferences, mental and moral traits, affections, etc."

In fraternal twins most of these agreements go by the board, with different heights, weights, likes, dislikes, different color of hair and eyes, different sicknesses, affections and characteristics in general. The differences between them are such as obtain between brothers and sisters generally. One phenomenon is identical handwriting.

"There is the matter of right-handedness" and left-handedness," says Dr. Danforth. "A rather surprising number of twins seem to be opposites in this respect, one right-handed and one left-handed. These are cases of 'mirror images,' with heart and other viscera reversed in their symmetry."

"It may be due to twin babies being placed in bed facing each other, and if care is not taken to change them about frequently their heads become asymmetrical on opposite sides. This may possibly affect the hemisphere of the brain differently, and certainly influences the amount of use that is made of the left hand in one infant and the right in the other. Notwithstanding this feature, the handwriting of duplicate twins is practically identical."

Much is said concerning the best results matrimonially of a pair who are opposites in most matters, as getting through life more happily than a pair of more identical tastes. But, no, the latter condition wins on investigation.

"Most pairs of parents with twins," says Dr. Danforth, "have many points in common, perhaps selecting each other on the basis of a community of physical as well as mental traits."

"In such mating the possible average of combination traits within a given family is somewhat reduced and the likelihood of children with similar germ plasm correspondingly increased. This would account for the hereditary resemblances of fraternal twins, also."

"It is difficult, by the way, to get first-hand data from fraternal twins. They don't seem to interest each other nor to make use of the fact that they have a twin brother or sister, a result of coming from two radically different cells, fertilized simultaneously. We got very few responses from this type, and these not very satisfactory, out of thousands of questionnaires sent out. Such twins differ widely in general appearance, size, mental capacity and tastes, are likely to leave school at different times and generally drift apart."

Science's advice to parents who desire their children to be like themselves is that they, the parents, must be components, not opponents—that like must wed with like, the same color of hair and eyes, if possible; if not, any way, the same likes and dislikes, the same tastes and physical and mental attributes, and the same general attitude to-



William Jennings Bryan as he would look (above) if the left side of his face were duplicated on the right, and (below) if the right side were duplicated on the left



How President Harding would look (above) if both sides of his face were like the right side, and (below) if both sides were like the left side

ward all the various problems of life. Recent investigations lead to the belief that the litters of dogs and other mammals are a result of the same conditions that produce identical human twins. Striking similarities shown by individual members of the litters are, it is thought, due to the fact of their being developed from the same germ plasm.

